

C L A I M S

1. A vaporizer comprising:

a vaporizing chamber configured to vaporize a liquid material and thereby form a gas material;

5 a spray portion configured to spray the liquid material in the vaporizing chamber;

a delivery part configured to deliver the gas material from the vaporizing chamber to a gas outlet; and

10 a heating portion configured to heat the vaporizer,

wherein the delivery part comprises

a filter member covering the gas outlet and configured to allow the gas material to pass

15 therethrough, and

a heat transfer member configured to transfer heat of the heating portion to the filter member.

2. The vaporizer according to claim 1, further comprising a control member configured to control
20 temperature of the heating portion based on temperature of the heat transfer member or the filter member.

3. The vaporizer according to claim 1, wherein the heat transfer member comprises a plurality of heat transfer members.

25 4. The vaporizer according to claim 1, further comprising a heater incorporated in the heat transfer member.

5. The vaporizer according to claim 1, wherein the heat transfer member is in thermal contact with the filter member at a position other than a peripheral portion.

5 6. A vaporizer comprising:

 a vaporizing chamber configured to vaporize a liquid material and thereby form a gas material;

 a spray portion configured to spray the liquid material in the vaporizing chamber;

10 a delivery part configured to deliver the gas material from the vaporizing chamber to a gas outlet; and

 a heating portion configured to heat the vaporizer,

15 wherein the delivery part comprises

 a filter member covering the gas outlet and configured to allow the gas material to pass therethrough, and

20 a shield plate covering the filter member on a side farther from the gas outlet.

 7. The vaporizer according to claim 5, wherein the shield plate is disposed to prevent imaginary straight lines representing the gas material and extending from the vaporizing chamber to the gas outlet from directly reaching the filter member.

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 8. The vaporizer according to claim 5, wherein a gas passage heated is formed between the filter member

and the shield plate to deliver the gas material to the gas outlet.

9. The vaporizer according to claim 8, wherein a clearance is formed around the shield plate to allow the vaporizing chamber to communicate with the gas passage.

10. The vaporizer according to claim 8, wherein an opening is formed in the shield plate to allow the vaporizing chamber to communicate with the gas passage.

11. The vaporizer according to claim 10, wherein the opening comprises a slit, which is bent in a thickness direction of the shield plate.

12. The vaporizer according to claim 6, further comprising a control member configured to control temperature of the heating portion based on temperature of the filter member or the shield plate.

13. The vaporizer according to claim 12, wherein the temperature of the filter member or the shield plate is set at substantially the same as the temperature of the heating portion.

14. The vaporizer according to claim 12, further comprising a temperature sensor disposed at the shield plate, wherein the control member is configured to control the temperature of the heating portion based on a signal detected by the sensor.

15. The vaporizer according to claim 6, further comprising a heater incorporated in the shield plate.

16. The vaporizer according to claim 6, wherein the heating portion comprises a heater embedded in a wall of the vaporizing chamber.

17. A vaporizer comprising:

5 a vaporizing chamber configured to vaporize a liquid material and thereby form a gas material;

a spray portion configured to spray the liquid material in the vaporizing chamber;

10 a delivery part configured to deliver the gas material from the vaporizing chamber to a gas outlet; and

a heating portion configured to heat the vaporizer,

wherein the delivery part comprises

15 a plate member covering the gas outlet and a wall around the gas outlet, with a gap therebetween to form a communication clearance, such that a gas passage connecting the vaporizing chamber to the gas outlet is formed between the plate member and the wall,

20 a plurality of columns disposed in the gas passage to serve as a fluid baffle, and

a heater configured to heat the gas material flowing through the gas passage.

25 18. The vaporizer according to claim 17, wherein the heater is embedded in the plate member.

19. The vaporizer according to claim 18, wherein the plate member has a surface facing the vaporizing

chamber and configured to serve as a vaporizing surface for vaporizing the liquid material.

20. The vaporizer according to claim 17, further comprising a heat transfer member configured to
5 transfer heat of the heater to the plate member, wherein the heat transfer member is in thermal contact with the plate member at a position other than a peripheral portion.

21. The vaporizer according to claim 20, wherein
10 the plurality of columns serve as the heat transfer member.

22. The vaporizer according to claim 17, further comprising a temperature control section configured to control temperature of the heating portion based on
15 temperature of the plate member.

23. The vaporizer according to claim 17, further comprising a filter member covering the gas outlet and configured to allow the gas material to pass therethrough between the gas outlet and the plate
20 member.

24. A vaporizer comprising:
a vaporizing chamber configured to vaporize a liquid material and thereby form a gas material;
a spray portion configured to spray the liquid
25 material in the vaporizing chamber;

a delivery part configured to deliver the gas material from the vaporizing chamber to a gas outlet;

and

a heating portion configured to heat the vaporizer,

wherein the delivery part comprises

5 a filter member covering the gas outlet and configured to allow the gas material to pass therethrough,

a heat transfer member configured to transfer heat of the heating portion to the filter member, and

10 a shield plate covering the filter member on a side farther from the gas outlet.

25. An apparatus for performing a semiconductor process on a target substrate, the apparatus comprising:

15 a process chamber configured to accommodate the target substrate; and

a gas supply system configured to supply a process gas into the process chamber,

20 wherein the gas supply system comprises the vaporizer according to claim 1.

26. An apparatus for performing a semiconductor process on a target substrate, the apparatus comprising:

25 a process chamber configured to accommodate the target substrate; and

a gas supply system configured to supply a process gas into the process chamber,

wherein the gas supply system comprises the vaporizer according to claim 6.

27. An apparatus for performing a semiconductor process on a target substrate, the apparatus comprising:

a process chamber configured to accommodate the target substrate; and

a gas supply system configured to supply a process gas into the process chamber,

wherein the gas supply system comprises the vaporizer according to claim 17.

28. An apparatus for performing a semiconductor process on a target substrate, the apparatus comprising:

a process chamber configured to accommodate the target substrate; and

a gas supply system configured to supply a process gas into the process chamber,

wherein the gas supply system comprises the vaporizer according to claim 24.